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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,741	12/24/2003	Masahiro Sekiguchi	247032US0	9103
22850	7590	11/03/2006	EXAMINER	
C. IRVIN MCCLELLAND OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				MOSS, KERI A
ART UNIT		PAPER NUMBER		
1743				

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/743,741	SEKIGUCHI ET AL.	
	Examiner	Art Unit	
	Keri A. Moss	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,2,6-8,10-12,17 and 19 is/are rejected.
- 7) Claim(s) 3-5,9,13-16 and 18 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/24/04;9/22/06.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Specification

1. The following title is suggested: Method and reagent for quantitatively determining hydrogen sulfide or sulfide ions.

Claim Objections

2. Claims 1 and 11 are objected to because of the following informalities: the claim language is excessively wordy and contains unnecessary redundancies. For example, please reword all sentences to use active rather than passive verbs. Instead of using "which further comprises," please use "further comprising." Second, each method step of claim 1 and each component of the reagent of claim 11 should be separated by starting a new line. Third, the grammar in the claims needs correction to maintain consistency. For example, the method steps in the beginning of claim 1 are written with active verbs while the chelating agent step is written in the passive voice. Please maintain consistency. Finally, it is unclear what the method steps are. Examiner recommends using more descriptive and clear verbs to describe the method steps. For clarity, Examiner recommends the following general format for claim 1:

[Preamble] comprising:

[active verb starting a new line for one method step]

[active verb starting a new line for second method step], etc.

Appropriate correction is required.

3. In addition, when a dependent claim adds a method step to claim 1, it is customary to use the language "further comprising" in the dependent claim. For example, Examiner recommends rewording claim 3 to read "The method according to claim 1 further comprising adding one of an aluminum salt and a gallium salt to the test specimen."

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1 and 11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for quantitatively determining hydrogen sulfide or sulfide ions, does not reasonably provide enablement for any reducing substance. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. The breadth of the claims include any substance capable of reducing another species. The invention relates to using iron ions, a metal indicator, and a copper chelating agent to quantitatively determine hydrogen sulfide or sulfide ions. The state of the prior art includes knowledge of a method for determining hydrogen sulfide or sulfide ion using metal ions and a metal indicator. Chemical reactions by their nature

are unpredictable. The inventor describes a reagent that quantitatively determines hydrogen sulfide. The working examples teach quantitative determination of hydrogen sulfide. Undue experimentation would be needed to make or use the invention as claimed based on the content of the disclosure because of the unpredictability of chemical reactions. It would require undue experimentation to determine which reducing substances other than hydrogen sulfide and sulfide ions can be determined by this method,

Claims 2-10 and 12-19 are rejected as dependent on claims 1 and 11.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
7. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is unclear what method steps are involved in applicant's claimed invention. Are the iron ions added to or contained within the specimen? Is the metal indicator added?

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. **Claims 1, 2, 6-8, 10-12, 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebinuma (EP 1 143 244 A1) in view of Chapoteau (USP 5,814,521).**
Ebinuma discloses a method for quantitative determination of hydrogen sulfide or sulfide ion by reacting iron (III) ions with the analyte, reacting iron (II) ions or residual iron (III) ions with a metal indicator and measuring the degree of color development

(abstract). The metal indicator forms complexes with ions other than iron, such as copper (paragraph 17). Hydrogen sulfide or sulfide ions may be formed by reacting homocysteine with an enzyme (paragraph 19). The iron (III) ions may constitute a complex (paragraph 39). The test specimen may be an environmental specimen (paragraph 6).

Ebinuma does not expressly disclose adding a chelating agent specific to copper ions. However, Ebinuma teaches that the metal indicator forms complexes with ions other than iron, such as copper (paragraph 17). Chapoteau teaches enhancing selectivity of a method for detecting metal ions by using a chelating agent such as neocuproine to mask copper (column 2 lines 17-27). Therefore, it would have been obvious to one of ordinary skill in the art to combine the teachings of Ebinuma regarding the metal indicator binding with iron and copper with Chapoteau in order to enhance the selectivity of the Ebinuma method.

Allowable Subject Matter

12. Claims 3-5, 9, 13-16 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach or suggest a method or reagent for quantitatively determining a reducing substance using a copper chelating agent, iron ions, a metal indicator and one of an aluminum salt and gallium salt. Nor does the prior art teach or suggest such a method or reagent further using an organic acid such as tartaric acid. Nor does the prior art teach or suggest

using one of aluminum salt and gallium salt with tartaric acid and an enzyme capable of reacting with a sulfur-containing amino acid to form hydrogen sulfide. Nor does the prior art teach or suggest such a method or reagent comprising the addition of an auxiliary agent that coordinates ligands around the iron ions.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keri A. Moss whose telephone number is 571-272-8267. The examiner can normally be reached on 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571)272-1700. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Keri A. Moss


Jill Warden
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